# LIVESTOCK EXHIBITS

of the

# UNITED STATES DEPARTMENT OF AGRICULTURE

at the

# TWENTY-EIGHTH

# INTERNATIONAL LIVE STOCK EXPOSITION

Chicago, Illinois

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1927.

# FOREWORD

Since the earliest times, visual instruction has been utilized to convey the latest thought in art and science. During recent years, exhibits have been a popular means of appeal in the field of Agriculture.

For the seventh successive year the United States Department of Agriculture is presenting a livestock exhibit at the International Live Stock Exposition.

As on previous occasions, the Department has endeavored to point the way to more intelligent methods of livestock production. The data presented and the practices recommended are based on practical experiments conducted by the Department and various State agencies, in many instances in collaboration with livestock farmers.

This pamphlet has been prepared to enable those who view the exhibit, to possess a permanent record of the information which it contains.

Representatives of the Department accompanying the exhibit are ready to explain to visitors various lines of the Department's work and to discuss livestock problems generally.

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## Service of Livestock to Mankind

The central feature of this year's exhibit emphasizes the many ways in which man is dependent upon domestic animals in his daily life. The following talk is given by a mechanical man who stands surrounded by models of a horse, cow, sheep and hog. The animals in turn are surrounded by representative products derived from them.

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LADIES AND GENTLEMEN: I am here today at the invitation of Uncle Sam. He asked me to speak on the subject of livestock. I told him I didn't know anything about livestock.

"Where have you been all these years?" he asked me.

"In the United States," said I proudly, "but I haven't had anything to do with livestock. Do I look like a farmer?"

"I've seen better looking farmers than you;" said he, "what IS your business?"

"Traveling salesman," I answered.

"What do you sell?"

"Boots and shoes."

"Then you ought to know something about livestock;" said he, pulling at his whiskers, thoughtful like, and squinting at me with a twinkle in his eye. "Where would you be if it weren't for the millions of cow hides and calf skins that grow in this old country?"

"I'd never thought of that, Uncle Sam," I had to admit, "guess I would have to find something else to do."

"Is that a good suit you have on there?" he inquired, prying into my affairs again. You see this income-tax business has spoiled him.

"It's all wool and as good as they make 'em," said I, letting him feel of the goods.

"That IS a fine suit," he agreed. "but it was

grown on a sheep's back, and that sheep had to graze over a thousand miles to gather the grass to build that suit. And besides, sheep produce lambs which also grow wool, as well as the tender, juicy chops you had for breakfast this morning."

"Didn't have chops," said I, contradicting the old fellow just to show him I was a free citizen. "Had ham and eggs."

I saw in a minute that I shouldn't have contradicted him, because he got riled.

"Bet that traveling bag contains a dozen animal products, "says Uncle Sam, flashing a new dollar bill that he probably had made the day before.

"I'll take you up on that, and this is one time you lose." says I, confidently.

"First place," says he, "the bag itself is made of cowhide."

"We're just countin' what's inside," I reminded him.

"There's a pair of socks that come from wool," says he. "One," says I.

"And a bone-handled knife," says he. "Two," says I, wishing it had been in my pocket.

"A wool muffler, leather gloves, razor strop and toilet case," he pointed out.

"Three, four, five, six," says I, keeping up with him, but feeling sort of shaky as we reached the halfway mark.

"A handsome horn-handled razor." "Seven," says I.

"A cake of soap made of animal fat." "Eight," says I mournfully.

"A clothes brush and a hair brush, each made of hog bristles and glued with animal glue; the stem on that pipe; that good-looking--"

I stopped him right there and handed him my dollar but he wouldn't take it. I told him if I couldn't think of anything else to say on the subject of livestock I

would show you folks the contents of my handbag.

Coming down on the train I got to thinking it over and I discovered that a person can scarcely turn around without becoming indebted to livestock.

They furnish a large part of our food supply.

In industry the wheels of machinery are turned by belting which once surrounded the carcass of some ruminating cow. The seats of our motor cars and easy chairs are made cushiony and comfortable with products from the cow, the horse, the sheep and the goat.

In the field of recreation, the horse provides the sport of kings; baseballs are made of his hide, footballs of cowhide, and tennis racquets of sheep gut.

In the domain of art, the brushes with which artists paint inspiring pictures are made of the fine hair which grows inside the ear of a cow.

In the realm of music, the delicate tones of our instruments are produced, in many cases, by the gentle friction of one animal product against another.

Modern medicine searches out a vast number of magic substances from the bodies of animals to cure man of his aches and pains. One precious extract requires the glands of 15,000 cattle to make a pound of it.

And finally the productiveness of our soils and the wealth of the world's harvests depends much upon livestock.

Let us therefore remember that when we improve and safeguard the Nation's livestock, we thereby increase the benefits which they return to all mankind.

# The Place of Sheep on the Farm

"The Clean-up Squad" is the catchword of a feature which portrays the remarkable ability of a flock of sheep to "tidy-up" a farm and keep its fields and fence rows free from weeds. While it is true that no practical sheepman will expect his flock to produce good mutton and strong wool on weeds alone, yet it is well known that much stubble, inaccessible pasture and feed that might be wasted is turned into good account by sheep. They even scatter fertility on the high spots where it is needed most.

## Sheep as a balancing part of the livestock enterprise.

Throughout the farming regions of the United States the keeping of sheep as one branch of the livestock enterprise is generally more satisfactory than the maintenance of sheep as the only livestock. Most farms that produce pastures and feeds that are adapted to sheep can also produce pastures and feeds that can be used by other livestock and vice versa. On a great many farms the complete and most efficient utilization of all the feed crops and pastures cannot be realized without sheep. In fact, the costs of operation on thousands of farms are not greatly effected by the maintenance of a moderate sized flock of sheep. In other words, the overhead or running expenses of the farms would be about the same without the sheep as they would be with them; not that sheep require no care, for they must have good care, but this can often be given by the men that must look after the farm operations any way. The sheep can be properly kept on feeds that are, or should be, grown on any well organized livestock farm, and special equipment for sheep need not be expensive.

However, in spite of this economic need for sheep

on so many farms, it is unwise for farmers to undertake sheep raising when they are not interested in sheep and will not give them a reasonable amount of intelligent attention. Sheep properly kept on farms to which they are adapted will as a rule return satisfactory net profits, but if they are grossly neglected even on farms to which they could be adapted the returns from them may represent very small net profits or sometimes actual losses.

## Sheep as a source of direct profit.

With the small overhead expenses required for farm sheep raising and the fairly remunerative prices for lambs and wool that have prevailed during the last decade net profits on investments in farm flocks are usually quite attractive to farmers who give their sheep good attention and market their lambs and wool by efficient methods. Direct profits from farm sheep are sometimes over estimated by persons who are planning to engage in sheep raising. As a result of careful studies by the U. S. Department of Agriculture and State experiment stations it is found best to plan on the basis of an annual cost ranging from $5.00 to $10.00 per breeding ewe. The averages for studies here mentioned have shown an annual cost of approximately $7.00 per breeding ewe. Gross returns will vary from about $8.00 to $15.00 a year per ewe in well-managed flocks with the average close to $10.00 or $11.00. It will be seen, therefore, that the annual net profits average in the neighborhood of $3.00 or $4.00 a ewe in well-managed farm flocks of moderate size kept on farms that are producing a considerable portion of the livestock products with cattle, hogs or other classes of farm animals. It must be remembered that the average profits here mentioned are for well-managed flocks. Neglected flocks may show a loss.

## Sheep as a means of soil improvement.

Sheep are especially well adapted to soil improvement. They spend a large part of their time on the tops of the hills or knolls in their pastures; thus the manure from sheep is very largely distributed by them on those parts of the fields where it is most needed. Another advantage is the thin and even distribution of the droppings of the sheep. The manure from well-managed sheep pens is well mixed with straw or other forms of bedding and the valuable liquid manure is largely retained in such a mixture of litter and droppings. Thus sheep manure is very effective as a soil builder when properly spread on the land.

## Sheep as a means of efficient utilization of farm grown feeds.

On most well-managed livestock farms there is usually an opportunity to grow some good sheep feed; in fact, on such farms much good sheep feed is grown whether it is planned for sheep or not. Among some of these commonly grown sheep feeds are legume hays such as clover, alfalfa, soy beans and cowpeas, also corn silage, corn stover and such grains as corn, oats and barley. Bluegrass pastures and the stubble of hay meadows are found on a very large portion of the livestock farms and they furnish splendid sheep pasture. Without sheep much of these feeds must be wasted.

## Conservative Grazing Pays

Sufficient proof to convince the most skeptical rancher is contained in this feature contrasting the curse of overgrazing with the benefits to be derived from conservative grazing of our western range lands. A line fence bisects a western panorama showing herds of beef cows and calves busy converting grass into beef. On one side of the fence the depleted soil and sparse, scraggly vegetation show the tell-tale signs of overgrazing, which is reflected in the thin, "leggy" cattle in the foreground. Across the fence are sleek, well-filled cattle of the same breed, enjoying an abundance of grass as a result of proper stocking by a ranchman who apparently appreciates that grass, like all crops, must be given a chance.

### The Range Livestock Industry

More than one-third of the area of the United States is used by the range livestock industry which produces a large part of the Nation's beef and lamb and the major portion of its wool and Corn Belt feeders. A sustained, profitable, range-livestock industry depends on the permanent maintenance of the range resources through conservative grazing.

### What is Conservative Grazing?

Conservative grazing is simply utilizing the forage to no greater degree than will assure perpetuating the vigor and growth of the important palatable range plants.

In average years at least 10 to 15 per cent of the palatable herbage of the valuable range plants should be left at the end of the grazing season. This insures reseeding.

Stockmen who practice conservative grazing recognize that spring is the critical period of the range year and require that a portion of the range area be reserved for spring use. In an average year part or all of the feed on such reserved spring range may not be used but, even so, it is better to have this margin available as an insurance during drought years and to avoid the risk of bringing about a gradual deterioration of the range.

## Benefits of Conservative Grazing

On the Santa Rita Range Reserve in southern Arizona the practice of conservative grazing, in connection with the range experiments under way there, has maintained profitable cattle production over a period of ten years with no necessity for forced sale of the improved breeding herd during drought.

An average annual calf crop of 78 per cent was secured and an average loss of only 3 per cent was sustained, although seven of the ten years from 1916 to 1925 were drier than normal.

Calves weaned in the fall and placed in a grama grass pasture reserved for them developed to best advantage and brought top prices with practically no cut-back. In the dry years the calves were sold at weaning time and the reserved feed used for the breeding herd.

On the basis of the average annual calf crop and loss for ten years at 1925 cattle prices, a 7.4 per cent profit on an investment of approximately $85 per cow was obtained.

Representative southern Arizona outfits grazing unregulated, over-grazed ranges, potentially equal to those of the Reserve, produced an average annual calf crop of 53 per cent, sustained an average annual loss of 10 per cent, and showed a net loss annually of 5.8 per cent on an investment of about $55 per cow.

## Dangers of Overgrazing

An attempt to graze more livestock on the range than the available forage will support always results in a shortage of feed. Continued over-grazing, especially during dry years, is reflected in

Poorer Condition of Cattle

Smaller Calf Crops

Excessive Losses in Drought Years

Poor Development of Calves

Sacrifice of Good Breeding Stock

Heavy Cut Backs in Animals for Sale Even at Low Prices

The inevitable result - Unprofitable Production

## Livestock Outlook Reports

Livestock prices rise and fall as they respond to changes in the supply of livestock and in the demand for meats. Demand varies according to the ability and desire to consumers to buy meats and is influenced to a large extent by business or economic conditions. Supplies, while influenced to some extent by uncontrolled factors, are generally increased or reduced as the result of mass action of producers. Intelligent and regulated production and marketing can be achieved only after studying and interpreting the facts regarding supply, demand, and price, and the conditions which may affect these fzctors. The average producer has neither the time nor facilities for acquiring and interpreting such facts, hence the Department of Agriculture is endeavoring to provide this service for producers through its outlook reports. These reports, issued in mid-winter and mid-summer of each year, summarize all the basic facts which indicate the probable supply, demand and price for cattle, hogs and sheep during the following 18 months and thus serve as a guide to those who use them in making production and marketing plans.

The outlook reports are prepared with a view to indicating the probable future changes in prices. Changes in hog and cattle prices for more than twenty years, are shown with brief statements of the important causes for each outstanding rise or fall in the prices. The factors which caused prices to advance are shown as balloons lifting the price line in an upward direction, while those which caused prices to decline are shown as weights which drag the price line downward.

The observant livestock producer is concerned with the market prospect for his animals because he must decide when will be the best time to sell and consequently approximately how much feed and labor will be required to meet a favorable market. Future success lies in his abil-

ity to plan his production and marketing operations intelligently and the purpose of the department's Outlook Reports is to assist him in doing this.

## Methods of Cooking Beef

"Choose your method of cooking according to the tenderness of the cut of beef" is the advice which the Department offers the visitor to this exhibit. Four pieces of beef of different shapes and sizes all cooked to a turn and ready for the table are arranged in their cooking utensils on a stove. The cooked meats, though fashioned of wax, look genuine, and would fool an expert in all respects but flavor and odor.

A fine, large porterhouse steak is in its place on the broiler rack. On one of the burners is a pot roast in its pot, and on another burner an interesting looking article in a baking pan. "What is it?" will be asked by many. It is a stuffed and rolled flank steak which has been tied with cord in 5 or 6 places, thus giving it an unusual shape for a piece of meat. Last, but by no means least, is a prime rib roast just out of the oven. It is, of course, a handsome roast of beef but the point about it that attracts most attention is a slender thermometer which is stuck through its top. By this simple means it is possible to tell when the meat is rare, medium, or well-done.

On the side of the stove containing the steak and the rib roast there is a panel which is headed "Tender Cuts of Beef". A list is given as follows:

| Steaks | Roasts |
|---|---|
| Tenderloin | Rib |
| Porterhouse | Loin |
| Club | |
| Rib (short cut) | |
| Sirloin | |

On the other side of the stove which contains the pot roast and the stuffed flank steak there is a panel

headed "Less Tender Cuts of Beef". These are listed as follows:

| Steaks | Roasts | Stews |
|---|---|---|
| Round | Rump | Neck |
| Rump | Round | Shoulder |
| Chuck | Cross arm | Skirt |
| Shoulder | Clod | Shank |
| Flank | Chuck ribs | Brisket |
| | | Plate |
| | | Flank |
| | | Heel of round |

"Choose your method of cooking according to the cut of beef." Tender cuts should be cooked so as to develop and retain flavor. This is done by applying heat without any moisture in the pan. A very high temperature is used at first to sear the outside; after the outside is seared, the heat is lowered in order that the meat may cook through without burning. This method should be used for tender roasts and steaks such as prime ribs, porterhouse, and sirloin. In order to make the less tender cuts of beef palatable it is necessary to apply "moist heat," or to use water in cooking. In order to develop flavor by browning, the meat is seared over first at high temperature, just as in the case of the tender cuts. It is then cooked slowly with moisture in the pan so as to form steam. Heat and moisture help to make the tough fiber tender. This method is known to the housewife as pot roasting or oven braising and is used to soften the fiber of less tender cuts. If very tough meat, for example neck or shank, is being cooked it should be covered with water and simmered after it has been browned. When water is added it removes much of the flavor from the meat but a large amount of delicious gravy results.

## Broiled Steak

Select a porterhouse or a sirloin steak from 1 1/2 to 2 inches thick. Trim the steak of excess fat, and wipe it off with a damp cloth. Grease the rounds of the broiler and place the steak on it underneath the flame of a gas oven. Do not close the door. Sear on one side and then turn, being careful not to break the tender coating which holds in the juices. When both sides are seared turn down the flame and cook the meat, turning to cook evenly to the desired "doneness". After searing, the steak may, if desired, be placed in the baking oven with the door closed and the cooking finished there. This will leave the housewife's time free for other last-minute preparations. When done, place the steak on a hot platter, add salt, pepper, and melted butter. Garnish with parsley and serve at once.

No definite time can be given for cooking a steak because of varying thickness, heat of oven, and personal preferences. A steak 1 1/2 to 2 inches thick will probably require 20 to 25 minutes to be cooked medium rare.

## Rib Roast of Beef

Select a three-rib standing roast, that is, one which has not been boned. Wipe it off with a damp cloth, sprinkle with salt and then lightly with flour. Place the roast in an open pan without water and with the fat side of the roast up and the ribs down so that as the fat melts and cooks out it will baste the meat. Through the fat covering, over the eye, insert a meat thermometer so that the bulb will reach the center of the roast. Have ready a hot oven, (500°to 525°F.), and place the meat in it so that the thermometer can easily be read. Sear the meat for 20 to 30 minutes depending upon the browning, then reduce the temperature to about 350°F. and continue the cooking until the thermometer in the meat reads about 140°F. for a rare roast, 160°F. for a medium roast, or 180°F. for a well-done roast. This will probably require 15 minutes to the pound for a rare roast, 18 minutes to the pound for a medium roast, and 20 to 22 minutes to the pound for a well-done roast. Serve the meat on a hot platter, surrounded by browned potatoes and by squares of Yorkshire pudding garnished with parsley.

## Pot Roast of Beef

The cuts of beef which are suitable for pot roasting are chuck ribs, cross arm, clod, and rump. Select a piece from 4 to 6 pounds in weight. Wipe with a damp cloth. Brown the meat on all sides in a heavy kettle using a small quantity of melted beef fat. When the entire surface of the meat is browned, place it on a low rack in the kettle,, add one half cup of water. Cover tightly and cook at simmering temperature until the meat is tender. The time required for cooking cannot be definitely stated but it will probably vary around three hours. Turn the roast frequently, sprinkling lightly with salt toward the last portion of the cooking. When tender remove the meat from the kettle and pour out the liquid. Remove from this the excess fat and then thicken the juices in the proportion of 1 1/2 to 2 tablespoons of flour to the cup of liquid. Mix the flour with a small amount of cold water until smooth and add to the juices and cook until thickened. Season with salt, pepper, and chopped parsley and serve with the meat.

## Stuffed Flank Steak

Flank steak weighing 2 to 3 pounds
1 1/2 cups stale bread crumbs
1/2 cup chopped celery
2 tablespoons butter
1 onion minced
1 teaspoon salt
1/8 teaspoon pepper

Wipe the meat with a damp cloth and lay out flat. For the stuffing brown the celery and the onion lightly in the butter and combine with the other ingredients. Spread the stuffing over the steak. Begin at one side of the steak and roll it up like a jelly roll. Tie the roll securely in five or six places with clean string. (When carved in slices the meat will be cut across the grain.) Sear the entire surface in a small amount of fat in a baking pan on top of the stove, turning it frequently until browned on all sides. Cover closely, place the meat in a moderate oven and cook for one and a half hours or until tender. When the meat is done, remove from the pan and prepare gravy as follows:

Drain off the fat. For each cup of gravy desired, measure two tablespoons of fat and return to the pan, add 1 1/2 to 2 tablespoons of flour and stir until well blended, and slightly browned. Then add 1 cup of cold water or milk and stir until smooth. Add 1/4 teaspoon of salt and cook for a few minutes longer. Serve with the meat.

## Yorkshire Pudding

1 cup milk
1/2 cup flour
1/2 teaspoon salt
2 eggs
4 tablespoons beef drippings

Sift the flour and salt, add the milk and beat until smooth, add the eggs, and beat with Dover egg beater for five minutes. Put the beef drippings into pans with high sides and when hot pour in the batter about one-half inch thick. Bake in a hot oven for 15 to 20 minutes. Cut in squares and serve at once with the roast.

## Soy Beans

An exhibit on soy bean culture and utilization enumerates the particular varieties of soy beans which are best adapted for hay, for seed, or for pasture in various sections of the country. This crop is more drought resistant and less sensitive to excess moisture than corn and yields an abundance of feed and forage. The seed should always be inoculated when soy beans are planted for the first time, warns this exhibit.

CLIMATIC AND SOIL ADAPTATIONS.- The soy bean has about the same range of climatic adaptations as corn. The Southern States and Corn Belt are most favorably situated for the production of seed, although early varieties introduced from northern Manchuria have greatly extended the profitable production of seed throughout the northern part of the United States. The soy bean succeeds on nearly all types of soil, but the best results are obtained on mellow, fertile, sandy loams or clay loams.

CULTURE AND HARVESTING - Soy beans are sown from early spring when danger of frosts are over to midsummer, depending largely on the latitude and use to be made of the crop. For seed production, 20 to 30 pounds of seed to the acre are required for rows 24 to 40 inches apart. When sown or drilled broadcast for hay or green manure, from 60 to 90 pounds to the acre are sufficient. The yields of seed range from 15 to 20 bushels to the acre in the Northern States and 25 to 35 in the Southern States. Under favorable conditions soy beans average 2 tons of hay to the acre.

VARIETIES - Varieties of soy beans are differentiated largely by the color and size of seed, though they also differ in maturity, habit of growth, yield, etc. The yellow-seeded varieties are preferred for the production of food, oil and meal, and include, late: Mammoth, Dixie and Tokio; medium late: Herman, Haberlandt, Chiquita; medium: Illini, Midwest, Dunfield and Mikado;

early: Ito San, Manchu, Elton, Hoosier, Wea, Mandarin, Minsoy, Aksarben and Soysota. For forage purposes the black and brown seeded varieties are most suitable and include, late: Otootan, Biloxi, Laredo, Goshen Prolific and Barchet; medium: Peking, Wilson-Five, George Washington and Virginia; early: Chestnut, Black Eyebrow and Wisconsin Black.

UTILIZATION - Soy beans may be used advantageously as either a seed or forage crop in many systems of rotation. They make good hay, as a silage and pasture and are valuable soilage crop. In combination with other crops such as corn, cowpea, Sudan grass, and sorghum it it furnishes a well-balanced ration, a large yield and a great variety of forage.

## Soy Beans in Pork Production

The production of soy beans in the United States has increased remarkably in recent years. Their use in hog feeding likewise has increased at an astonishing rate. Soy beans, however, exert a softening influence; that is, under some conditions they are responsible for an undesirable lack of firmness in the pork. This is a condition commonly referred to as "soft pork".

A proper use of soy beans in pork production, in order that a firm carcass of high quality will result, is the subject of this feature. The results presented, or the conditions specified as necessary for the production of "firm" and "soft" carcasses, were determined in connection with a nation-wide study of the causes of soft pork being conducted cooperatively by the U. S. Department of Agriculture and a number of the State experiment stations. The following State stations are participating in the work at this time:

| | |
|---|---|
| Arkansas | Mississippi |
| California | North Carolina |
| Georgia | Ohio |
| Indiana | South Carolina |
| Michigan | Tennessee |
| Virginia | |

The exhibit points out that when the feed combination of 6 parts corn, and 1 part soy beans, is fed, the INITIAL WEIGHT of the hogs, the DAILY GAIN, and the LENGTH OF FEEDING PERIOD are the important factors in determining the firmness of the product. Pigs weighing 115 pounds or more at the start of these experiments usually produced firm carcasses when they gained at least 1 1/2 pounds per day for 10 weeks or more. Mineral mixture was fed as a supplement to the feed mixture mentioned. On the other hand, when the pigs weighed 90 pounds or less at the start and gained up to one pound per day on the same feed for 14 weeks or less, soft carcasses ordinarily were produced.

## Sweet-Clover Pasture

Sweet-clover pasture properly managed will carry more stock and return more profit than any grazing crop known to-day. A good stand of second-season sweet clover can carry two head of cows per acre from early spring till midsummer and cases are known where 4 head did not keep it down. Get the stock in early, when the clover is 6 inches high and put cattle enough on to keep it from blossoming; with one cow to an acre the clover gets old too fast.

For continuous grazing on sweet clover two fields are necessary, one that has just passed its first winter and one starting its first season's growth. Turn cattle on the older field in spring and keep them there till July 15th to 30th. By this time the sweet clover will bloom and get too woody to be palatable and the clover on the new field should be 6 to 8 inches high. The new clover will carry only about one half the stock the old field carried, and allowance must be made for that by having double the acreage or by having other pasture. An excess acreage in the fall is not a bad thing as any field not needed for grazing the next season, can be turned under the next spring for corn with great benefit to the corn.

After grazing stops on the older field the clover will make considerable growth and this can be plowed under in fall with great benefit to any succeeding crop.

There is less danger from bloat with sweet clover than with other clovers but cases have been known and the usual precautions should be taken.

## Self-Feeding Sows and Litters

A sow and her litter of thriving pigs in a pen in the center of the exhibit room illustrate the merits of the cafeteria or self-feeder system of raising sows and their litters. A three-year experiment was conducted at the United States Experiment Farm, Beltsville, Md., to determine the possibilities of using the self-feeder for sows and their pigs during the entire suckling period.

Close observation of the sows and pigs during these tests indicated that both sows and pigs using the self-feeders looked better and were more thrifty than the sows and pigs in the hand-fed lot.

A noticeable fact about the sows in the self-fed lots was that there never was any crowding at the feeders. Scarcely ever were there more than two or three sows eating at the same time, even when a dozen or more sows were being fed from the one feeder.

A distinct advantage in the breeding of sows for the succeeding litters became evident during the experiments. A total of 42 sows in the self-fed lot was bred before the pigs were weaned. Of this number 81 per cent settled from the first service. Seventeen sows in the hand-fed lot were bred during the suckling period, but only 47 per cent of them settled at the first service. No attempt was made to breed all the sows in either of the lots for the next farrowing period during the suckling period.

There was a striking difference in the quantities of feeds consumed in the various lots during the three years. The sows and pigs in the hand-fed lots consumed a much greater quantity of middlings than those in the self-fed lots.

The outstanding fact among the results of the experiments is that the feed cost per 100 pounds of gain was materially less in the self-fed lots than in the hand-fed lots. In the self-fed lots it required a total of

441.06 pounds of feed for 100 pounds of gain, whereas in the hand-fed lots 603.09 pounds were required. At the beginning of the test it was expected that the sows and pigs when placed on self-feeders would show better results so far as weight and condition were concerned, but it was not suspected that the result could be accomplished with less feed.

Taking into consideration, as demonstrated by these tests, that sows and pigs on self-feeders may be carried through the suckling period with less feed per 100 pounds of gain and are in better condition at weaning time, and that it is possible to put the pigs on the market at an earlier age, together with the saving of labor and feed, it seems conclusive that the practice of self-feeding sows and pigs during the suckling period is one that can be safely and profitably followed by hog producers.

During 1924 and 1925, the system of using self-feeders for sows and litters throughout the suckling period was followed exclusively at the Beltsville farm with entirely satisfactory results.

The number of sows and litters that may be fed on self-feeders in any single lot has not been determined. At the experiment farm where these tests have been carried on, as many as 20 sows with their litters have thrived with but one self-feeder available. It is always advisable to have good pasturage for the sows and pigs during the suckling period regardless of the method of feeding used.

## Current Market News

"Know your Market," is the catchword in this exhibit. Knowing the market involves a knowledge of market transactions as soon as possible after they occur. For those actually on the market, a knowledge of local transactions usually is immediately available, but for others interested it is necessary to provide facilities for collecting and transmitting the information as quickly as possible.

The collection of livestock, meats and wool market information requires trained observers. In these highly specialized industries the men who collect the information must not only be thoroughly conversant with the details of the various transactions but must also have a thorough understanding of the factors which determine the relative desirability and value of different animals, carcasses or lots of wool.

The Bureau of Agricultural Economics of the United States Department of Agriculture maintains a highly developed market news service on livestock, meats and wool, with branch offices in the principal livestock markets, including Chicago, East St. Louis, Kansas City, South St. Joseph, Omaha, South St. Paul, Indianapolis, Cincinnati, Cleveland, Buffalo, Pittsburgh, Lancaster, Jersey City, New York City, Wichita, Fort Worth, Denver, Salt Lake City, Ogden, San Francisco, Los Angeles and Portland, and important meat-consuming centers such as Boston, New York Philadelphia and Chicago. A wool market reporting office is also maintained at Boston. Connecting these offices the Bureau maintains a telegraphic wire service which keeps each office continually advised of market conditions existing elsewhere. This service is conducted by highly trained, impartial and unbiased reporters and market analysts whose sole aim is to benefit the industries involved.

That the information may be of the greatest pos-

sible service, its transmission from point of origin to those having use for it must be accomplished in the shortest possible time. Four distinct types of distribution are used, the radio, the commercial telegraph companies, the press and the mails.

With two exceptions, one or more radio stations at each of the markets listed above broadcast the department reports. A number of additional stations located elsewhere also utilize the service. This radio market news service enables farmers and stockmen whether nearby or in remote places to keep in close contact with conditions prevailing at one or more livestock markets in which they may be interested.

The telegraph companies have for a number of years maintained what they call a commercial news service. With respect to livestock this consists of one or more reports issued at different hours of the day. At every market where available the Department's information is used exclusively in this service.

All leading press associations carry specially prepared Department reports on both trunk lines and pony circuits and thereby reach thousands of daily and weekly newspapers scattered throughout the United States. Many local and country newspapers and livestock and trade journals are served directly from the different reporting offices.

In addition to the three highly specialized means of distribution noted above most of the offices mimeograph and mail a large number of reports to those requesting them.

Realizing the importance of quick dissemination of the information if it is to serve the industry to the best advantage, the department market news representatives are stressing the three rapid means of distributing the information, namely the radio, the commercial telegraph, and the press.

## Farm Horseshoeing.

"No foot - no horse" is an axiom to most horsemen. Yet many of us do not comprehend its meaning or its importance as related to efficient farm horses. How far will you run your automobile on a flat tire? Every owner of a machine looks over his tires occasionally and his ear is thoroughly attuned to the symptoms of a blow-out or a puncture, and when these appear he will immediately take steps to remedy them. The feet of horses should also be closely examined at frequent intervals. Bad feet incapacitate draft horses on hard pavements and materially reduce the efficiency of horses for any work.

The booth on farm horseshoeing is devoted primarily to the care of the feet of farm horses and the proper care of the hoof, and also to shoeing horses so that they may be kept in service and so that their sale value may be enhanced. One section of this booth describes the care of the colt's foot by proper trimming and care so as to induce normal conformation of the foot and leg. Another section of this booth is devoted to the shoeing of farm horses with ready-to-wear shoes, which may be procured from the local dealer in almost any community and put on by the farmer. This is accompanied by a demonstration and explanation of the proper method of trimming the foot and putting on the shoe. The various sizes of ready-to-wear shoes are also exhibited, also the different tools essential for the proper trimming of feet and nailing on shoes.

Another feature of this booth is the exhibition of a continuous series of pictures describing the care of colts' and horses' feet and the various steps involved in shoeing farm horses. The trimming and leveling of hoofs, fitting shoes and nailing them on are also explained in Farmers' Bulletin 1535, "Farm Horseshoeing," which is distributed from the booth and may be received on application.

## Official Beef Grades

"When you Buy Beef be Sure of its Quality."
"The Grade of the Meat is the Grade of the Animal."

In order to carry the benefits of the Government's efforts at standardization of livestock and meats to the wholesaler, retailer, and eventually to the consumer there has been devised a method of marking meat carcasses according to quality. An official grade stamp is used so that those who are not expert judges of meat may select the quality meat they want and know that they are getting it.

This service has been begun on an experimental basis with the grading of both steer and heifer carcasses. At the request of either the seller or the purchaser, the carcasses of beef are graded by a Government grader and marked either with the square wholesale designation or with a ribbon stamp. The latter stamp makes it possible for the retail cuts to bear the imprint so that it may be seen on the consumer's purchase. At the present time this service is available only in certain markets.

Under the existing arrangement, the experiment in grading and marking with the ribbon stamp has been applied only to the two highest grades -- namely prime and choice. The grading is done in the cooling rooms of the packing houses, and an increasing percentage of carcasses are being graded at several of the larger packing centers.

There is a vast difference between similar cuts from carcasses of different grades. In other words, a rib roast from a choice steer would be of better quality and should be worth more money both wholesale and retail than one from a medium or common carcass. Yet to a large number of users of meat the ability to judge between the quality of the cuts of the different kinds of meat is a very difficult matter. The meat grading and marking service as rendered by the Department of Agriculture pro-

vides a method of choosing the particular quality of meat which the buyer desires.

The exhibit which covers this subject depicts the actual process of marking the meat in the packing-house cooler. This is done by means of a large panoramic scene showing the long lines of carcasses hanging in the cooling room and the grader at work. The wholesale and retail selections of meat bearing the official grading stamp are displayed in a refrigerated case in front of the large scene.

"The Grade Stamp on Beef is the Consumer's Guarantee of Quality."

Grading and stamping beef makes possible the sale of cattle on the basis of their meat value.

## Hog Cholera Control

Hog cholera destroys more hogs in the United States than all other diseases combined. It has taken a toll of 73 million dollars from American farmers in a single year and still collects from 20 to 30 million dollars annually.

Many of the ways in which hog cholera is carried from farm to farm can be avoided by the exercise of proper care. Sanitation, disinfection, and self-imposed quarantine are important. The Federal Bureau of Animal Industry has made a study of the disease and finally developed anti-hog-cholera serum, which is the only known reliable preventive agent. The simultaneous inoculation of hog-cholera virus and this serum enables the hog to acquire immunity against cholera.

Cholera attacks strong and healthy hogs as well as weak ones. Therefore, it is safe to suspect cholera when hogs first show signs of sickness.

Inasmuch as no cure has been found for hog cholera, the proverbial "ounce of prevention" is worth its weight in gold against this destructive disease. Two safe rules are to K E E P T H E P R E M I S E S C L E A N A N D I M M U N I Z E A T O N C E I F T H E D I S E A S E T H R E A T E N S .

New hogs should not be added to the herd until they have been watched in quarantine for 3 weeks. During an outbreak, in fact, a strict quarantine should be enforced on the whole farm. All dogs and other roving animals in the community should be confined. Non-immune hogs should be kept away from the streams, roads, and line fences. All dead hogs and viscera from butchered animals should be burned or buried deep and covered with quick lime. Stock cars and stock yards which have been occupied by hogs should be disinfected before again being used. It never pays to ship sick hogs to market as many die en route or after arrival, and besides being unlawful this practice is one of the principal ways by which the infection is spread.

If the sow is immune from cholera her pigs will be safe as long as they are suckling. If the sow is not immune, as a rule, both sow and litter should be immunized if cholera threatens. And inasmuch as little pigs from immune sows lose their natural immunity as they grow older, it is often the part of wisdom to protect them with the simultaneous treatment.

Every hog raiser should read a copy of Farmers' Bulletin No. 834, entitled "Hog Cholera," or a bulletin on the same subject published by his State agricultural college.

There are three types of anti-hog-cholera serum available to the purchaser, namely, defibrinated-blood serum, clear, unconcentrated serum, and clear, concentrated serum, the intrinsic values of which are dependent upon the quality and quantity of true or protective serum present in each.

Concentrated serum contains over 80 per cent of protective serum, and therefore is 25 per cent more valuable than other types of cholera serum. Defibrinated-blood serum and unconcentrated serum both contain 65 per cent of protective serum, and each is only 80 per cent as valuable as the concentrated product.

The immunizing properties and hence the intrinsic value of each type of serum are in direct ratio to the quantity of true or protective serum in each.

The minimum doses which establishments are permitted to recommend for the different types of serum all have the same quantity of protective serum.

Elimination of the blood cells in the clear, concentrated product not only makes its heating practicable and improves its keeping qualities but reduces its bulk, and thus makes it the most satisfactory type of serum for hog-cholera prevention.

In recognition of the high quality of the concentrated type of serum a three-year return date for it is permissible, whereas this date is limited to two years for the other serums.

By examining the label of each container of serum one can readily determine the type.

Circular No. 11 of the Department discusses the comparative values of these types of serum in more detail.